World Academy of Science, Engineering and Technology
International Journal of Bioengineering and Life Sciences
Vol:12, No:01, 2018

DNA and DNA-Complexes Modified with Electromagnetic Radiation

Authors : Ewelina Nowak, Anna Wisla-Swider, Krzysztof Danel

Abstract : Aqueous suspensions of DNA were illuminated with linearly polarized visible light and ultraviolet for 5, 15, 20 and 40 h. In order to check the nature of modification, DNA interactions were characterized by FTIR spectroscopy. For each illuminated sample, weight average molecular weight and hydrodynamic radius were measured by high pressure size exclusion chromatography. Resulting optical changes for illuminated DNA were investigated using UV-Vis spectra and photoluminescent. Optical properties show potential application in sensors based on modified DNA. Then selected DNA-surfactant complexes were illuminated with electromagnetic radiation for 5h. Molecular structure, optical characteristic were examined for obtained complexes. Illumination led to changes of complexes physicochemical properties as compared with native DNA. Observed changes were induced by rearrangement of the molecular structure of DNA chains.

Keywords : biopolymers, deoxyribonucleic acid, ionic liquids, linearly polarized visible light, ultraviolet
Conference Title : ICBC 2018 : International Conference on Biomaterials and Chemistry
Conference Location : London, United Kingdom
Conference Dates : January 18-19, 2018